

## CHEMICAL AGENT DETECTOR

### ABSTRACT

A chemical agent detector utilizing surface acoustic wave (SAW) sensors for detecting the presence of a multitude of chemical agents by sampling ambient air is provided. A pressure-differential manifold having an air intake port, an exhaust port, a valve and a pump is used to draw the ambient air into the manifold to be tested. A plurality of SAW sensors mounted on sensor driver boards which are in turn mounted on the manifold come into contact with the ambient air sample. Each SAW sensor is coated with a substance that has an affinity for detecting a particular chemical agent. Each SAW sensor driver board generates a continuous RF signal which emits a frequency shift if a particular chemical agent is detected. A power cycler module turns each sensor driver board on and off such that only one sensor driver board is powered-on at a given point in time. An RF multiplexor receives the continuous RF signals generated by the sensor driver boards and outputs one of the RF signals to a microprocessor based upon a timing signal generated by the microprocessor. The microprocessor interprets the frequency shift as the detection of a chemical agent and provides an alarm that a particular chemical agent has been detected.

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